GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST-OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, JANUARY 30, 1895.

TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLE:—Legislation against Plant Pests 41
An Old Bridge and a Long-lapsed Thoroughfare in Massachusetts. (With figure.) 42
Gardening a Good Outlet for American Vitality ..... *M. C. R.* 42
PLANT NOTES 44
NEW OR LITTLE-KNOWN PLANTS:—A Monstrous form of the Black Spruce. (With figure.) 44
CULTURAL DEPARTMENT:—A few Good Shrubs of the Hardiest Type. *J. G. Jack.* 45
Vegetable Garden Notes ..... *W. N. Craig.* 46
Propagation of Chrysanthemums ..... *T. D. H.* 46
A Few Plants that Like Shade ..... *F. H. H.* 47
MEETINGS OF SOCIETIES:—Nebraska State Horticultural Society 47
Western New York Horticultural Society 48
RECENT PUBLICATIONS 49
NOTES 50
ILLUSTRATIONS:—An Old Bridge in Wrentham, Massachusetts, Fig. 6 43
A Monstrous Form of the Black Spruce, Fig. 7 45

Legislation against Plant Pests.

IN the month of May, 1894, a resolution was passed by the Legislature of Massachusetts requesting the Representatives and Senators from that state in Congress to use their influence in securing from the Federal Government an appropriation of $100,000 to assist the commonwealth of Massachusetts in exterminating the gypsy moth. A committee appointed by the Massachusetts Board of Agriculture has visited Washington in pursuance of this resolution, and, as we understand it, the matter is now regularly before the Congress of the United States. Really, this is not a new movement, for the effort to secure this appropriation is simply a renewal of what was tried last year. There is little probability, however, that any action will be taken in this matter at the national capital, although that section of the Constitution which authorizes Congress "to provide for the common defense and general welfare of the United States" has often been interpreted with great liberality. We can all remember when Congress authorized agents of the Department of Agriculture to enter upon private premises and slaughter animals which were adjudged to have pleuro-pneumonia, and then paid the owner what they pleased. The general welfare seemed to demand that our herds should be guarded against this danger, and, as a matter of fact, pleuro-pneumonia was utterly stamped out.

Few persons now believe, however, that it is practicable to exterminate the gypsy moth. The state commission, which has been fighting it, have undoubtedly done much to prevent its spread and have narrowed the territory over which it once extended. But this moth is so prolific and so indifferent as to what it feeds upon that its actual extinction, now that it has gained a foothold, seems out of the question. It may be true that if the insect is allowed to multiply unchecked it will overspread a large portion of the country, and in this way prove a national calamity, but the machinery for restraining it has now been so thoroughly organized that a comparatively small force of men employed as watchers in districts that have not been entirely cleared can control and gradually lessen its ravages. The western states will not be inclined to spend money to protect themselves from a danger so remote, and will probably suggest that Massachusetts should take care of her own insects. This is certainly a wholesome rule. In this particular instance it may be a special hardship for Massachusetts, but there are many other insects quite as destructive, and there are fungous diseases even more serious, and if this state or other states should once discover that national aid was easy to obtain they would do nothing for themselves, but trust to general welfare appropriations altogether.

It will never answer, on the other hand, to make light of the dangers and damage which come from insects, fungi and other foes of agriculture and horticulture as not worth considering by legislatures, state and national. If, as it has been estimated, this damage amounts in the country to half a billion dollars a year, or say a million and a half of money every day, there are few subjects of greater economic importance. It must be admitted, too, that these losses can in no way be checked without coöperation of some kind, and organized effort usually comes in the form of law. It is worse than discouraging for a man to spend time and money in ridding his Apple orchards of the tent caterpillar, or his Plum-trees of the black knot, when his neighbor allows both insect and fungus to multiply on trees on adjacent land. It does not seem unreasonable, then, in cases for which there are known remedies, that landholders should be held responsible for their own premises, and that when these premises are allowed to become hot-beds of pestilence and breeding-grounds of injurious insects, the representatives of the people should step in and clean out these plague spots at the expense of their owner. Laws which authorize the destruction of Peach-trees affected by the yellows have already been passed in Michigan, Delaware, New York and California, and in New Jersey the officers of the state experiment station are empowered to enter on lands where plants are infested with any new fungus and destroy the same by fire or otherwise as they shall deem best. In one of the north-western states a law was passed to compel farmers to plow over lands where the Rocky Mountain locusts had laid their eggs, to prevent injury the following year, and it provided for having this work done by the state where the landowners neglected it.

In fact, it is not difficult to draft laws to protect every careful farmer and fruit-grower from noxious insects and diseases which are bred on the grounds of careless neighbors. The trouble is that the public sentiment behind these laws is not, in many cases, sufficiently active and vigilant to enforce them. So far as we know, the law in New Jersey, which was aimed at a new Cranberry fungus, has never been put into execution. Almost every state has a statute against permitting the Canada Thistle to go to seed, and yet how many persons have ever been prosecuted for such negligence? The very classes most interested in the extermination of the Peach yellows and the black knot have often combined to defeat legal action, and the farmers whose lands were plowed over to destroy the locusts prosecuted the state officers for trespass. Nevertheless, just as fast as communities are educated up to the enforcement of them, such laws ought to be enacted. Everybody in eastern Massachusetts, for example, ought to know the tent caterpillar and the cankerworm, and ought to realize what their unchecked ravages mean. It would seem that the time has come in some states, at least, when public opinion ought to be sufficiently strong to enforce a law compelling every man to keep his land cleared of these pests. Other insects will doubtless prove quite as injurious at some future time, and, therefore, such a law may well be broadened out to give the state entomologist authority to warn landholders of the importation of any new insect, or of the appearance in alarming numbers of any that are well known.

One difficulty is that people do not know their foes when they arrive. The gypsy moth itself would not have gone on increasing for several years before it was discovered unless it had started in a region where the cankerworm defoliated every year a large portion of the trees, and the inhabitants had become

so accustomed to seeing injuries of this sort that they never thought of examining one of the marauders to see what it looked like. Pear-trees have been dying for half a dozen years in Essex and Union counties, New Jersey, and it was not until last year that one out of the scores of men who saw their orchards wasting away thought of sending one of the destructive borers to the experiment station to be identified. The wood leopard moth must have been ravaging the shade-trees of the city of New York, Jersey City and Newark for years before the year 1887, when the first specimen was accidentally found in a spider's web, and yet there are more collectors of insects in this one region than in any other portion of the United States. The story of the pear midge and the red-necked blackberry borer has been told in these columns more than once, and we have given examples of other insects and diseases whose ravages at the first could have been arrested by the prompt action of some one in authority, but which have gone on conquering without check until they are almost hopelessly beyond control.

Experience has amply shown that many of the most disastrous outbreaks of our insect enemies could have been easily quelled at the outset. To meet such emergencies it is necessary that the machinery for repressing them should always be ready. There should not only be enactments authorizing constituted authorities to enter the field at once, but means and penalties should be provided to insure the enforcement of the law. As the knowledge of insects and their ways is necessarily limited, these means of precaution and suppression should be always in the charge of skilled entomologists. More than all, every known method of popular education should be employed through the press, through farmers' institutes, through the agricultural colleges and experiment stations, and through the public schools, if need be, to instruct the people as to the magnitude of the loss which these enemies to plants may cause, so that the officers whose duty it is to act will have the moral support of the entire community.

An Old Bridge and a Long-lapsed Thoroughfare in Massachusetts.

NOT long ago a Boston paper contained an account of the old Indian trail which led between Boston and Plymouth, and which was, for a considerable period, the thoroughfare between the capitals of the two leading New England colonies. This old trail traverses from one border to the other Boston's fine Franklin Park, and for a considerable distance its course may still be traced, though the improvement of the park has, to a certain extent, obliterated it. The claim that this old path is the Indian trail to Plymouth evidently rests upon traditions in the families who have owned land in this neighborhood from the period of the first settlement, and it is undoubtedly very good evidence, as far as it goes.

These early trails and roads are a very interesting feature of many eastern towns, and should be, for that matter, of western towns as well. Many of them, of course, have developed into modern thoroughfares, and have thus lost their interest as relics of the past. In many cases, however, the exigencies of modern traffic have caused the construction of entirely new roads, and left the old thoroughfares to lapse, first into cart-roads and then into footpaths, and at last, no doubt, to be almost totally obliterated by up-springing woods. But it is astonishing how long an old road may be traced through the woods, even after every sign of human interest in it has been lost.

In the old town of Wrentham, Massachusetts—a place saturated with traditions of King Philip's war, and where the stump of an old Oak is pointed out as the tree in which the famous Indian chieftain successfully concealed himself when the whites were pursuing him—there is a beautiful and most interesting old stone bridge which now serves to carry across Mill Brook a path leading from a dwelling-house to a spring. No road whatever now crosses this solid old arch; but the path which goes over it bears many signs of having once been a thoroughfare. It leads from a locality now called Glenwood, where there is a lonely shoddy-mill, to a locally famous ledge called Indian Rock. Here there is very good evidence that a band of thirty Indians who had participated in the Medfield massacre were waylaid and slain by the whites during Philip's war.

The old bridge is shown in the accompanying illustration (see page 43), and is from a photograph taken in the summer of 1894 by Miss Helen Chamberlin. It is built wholly of a slate-like stone, which now possesses a beautiful purplish tint. It has a covering of turf; it is almost completely overgrown with a luxuriant mass of mingled Poison Ivy and Virginia Creeper, and the stream beneath it, which just above issues from Whiting Pond to join the Charles several miles lower down, is here choked with all manner of water-plants. The region about it is an utterly wild one—scarcely tamed at all by the shabby and solitary little shoddy-mill which stands near. No one about the neighborhood seems to know the history of the bridge. It is certainly extremely old; it must have taken a great deal of toil to build it; and manifestly it once carried a thoroughfare over the little river.

Gardening a Good Outlet for American Vitality.

IT is sometimes asked why there is so much more interest taken by the English clergy and country gentlemen in gardening than is manifested by the corresponding class in the United States. Why is it that in our country parishes we do not find that enthusiasm which has given us so many charming books about gardens from reverend gentlemen in England who have rendered practical service to floriculture? It was to the experiments of the Honorable and Reverend William Herbert, in 1836, that we owe some of our earliest knowledge in hybridization. Indeed, his efforts were so coolly received by contemporary botanists that he complains that their answer to his curious specimens was "we do not thank you for your mules." We have an attractive picture of Sydney Smith working to beautify the grounds about his various forlorn rectories. And who does not relish his practical joke in honor of a coming guest, for whom he made the parody of a park in his domain by tying oranges to the glossy leaved shrubs in the garden, and fastening horns to the two donkeys peacefully grazing on his tiny lawn that they might play the part of deer?

The Reverend Charles Kingsley made quite a little paradise out of a damp and most unpromising situation at Eversley. He drained ponds, and planted and beautified; turned a wretched chicken-yard into a grassy court bordered with flower-beds, and trained Roses, scarlet Honeysuckles and Virginia Creepers to climb over the wall between the house and stables. His borders were always gay with Phloxes, Larkspurs, Pinks, Pansies, Roses and Carnations, and his rare trees and blossoming vines afforded him great delight, and transformed a neglected spot into a charming garden. We all know how enthusiastically Dean Hole has worked to interest the British public in flower-shows, and what his single efforts have done for the development of floriculture all over England; and these well-known names are only a few among many who have taken, and still take, the keenest interest in this beautiful pursuit, and find in it their solace and delight.

Of course, the English rector or vicar has a peace of spirit from the permanence of his position which the American clergyman, dependent upon his popularity with an exigent congregation, cannot enjoy. The calm superiority of district visiting is quite another thing from the weary social duties of a country parson in a Yankee village; but there must be something besides this to explain why more ministers here do not put their spare time into their gardens, and so gain at once health and enjoyment by wholesome labor.

The climate, of course, goes for a great deal, for Eng-

land's damp, mild atmosphere keeps one, perforce, upon the go, and apparently there are few months in the year when a man cannot work comfortably in his garden and find something to reward his efforts. There roses are to be found until Christmas, unnipped by frost, and Thorns are known to bloom in midwinter. Mrs. Boyle, in *Days and Hours in a Garden*, tells how she cut a long spray, all wreathed in pearly bloom, on New Year's Eve from the Glastonbury Thorn at Marston Bigot, in Somersetshire. In that mild climate Daisies bloom in January, and Hepaticas and Violets are found on warm and mossy banks. Primroses, apparently, never fade in Mrs. Boyle's garden, and Iris ensata ventures to appear in February. Daffodils take the winds of March with beauty, but are preceded by the Snowdrop, the Crocus and the Polyanthus, and accompanied by the Kerria-buds and pink tints upon the Peach-trees.

Such things are rare with us so early, north of Washington, and one can realize how under such circumstances the garden in England becomes a constant wooer which ever encourages and recompenses its votaries.

In England the rich man enjoys his garden, plans it, expresses himself in it. Agriculture and forestry are a part of his business in life. He is, and must be, a husbandman in a large sense, must understand the details of his estate, and give personal consent to the cutting of timber. Here the wealthy owner of a place often takes no more interest in it than in the sidewalk in front of his town house. A glance shows him that it is clean and well swept, and that is all he wants to know. The detail is left to the gardener, and his ideas, not those of the proprietor, are expressed in the grounds. The effect of this is that a man's culture, his fine taste, his trained critical perception go for nothing in his surroundings, and a general dead level of uniformity ensues, with a few notable exceptions where some one takes the matter into his own hands and produces a definite and interesting result which bears the traces of thought and individual experience.

It would be a good thing for us if the country gentleman could be revived with his traditional interest in his lands and crops; and it is possible that the new impulse to remain late in the country is an evidence that the tide is setting that way, and that the coming century, among its other developments, will witness a growth in personal interest in country places. Every one who has once tasted the real delights of gardening returns to it with zest. Tranquilly pursued it gives a certain richness to life and thought, a wholesome basis for intellectual labor. It is a common bond between the wise and the ignorant, a pursuit wherein men of different station can interchange rôles and mutually impart knowledge. Rivalry here is of the friendliest; the cottager's Rose may surpass that of a duke, and the interest of one in his specimen be as keen as that of the other.

Fig. 6.—An Old Bridge in Wrentham, Massachusetts.—See page 42.

There is another reason, too, why folk walk abroad in the little island more than they do here, which has been noted by Mr. Edward Freeman in the *Fortnightly Review*, and Mr. Price Collier recently in the *Forum*. The American loves reading more than the Englishman, and the garden finds a rival in the library. Both these writers note that while there are more profound scholars in England, the "general reader" exists in far greater numbers on this side of the Atlantic. The Yankee is nothing if not well smattered, and his newspapers are a day's work in themselves. Moreover, his head is apt to be full of all manner of things which conflict with the serene pleasures of digging and weeding. Business, politics, all sorts of duties, intervene; he spends his life in one perpetual strain, driven by the whirling temperament within him; by the maddening climate without; by the infinite unrest of a seething civilization which boils about him, and by that impulse to get ahead which tethers him to an office desk, and is at once his glory and his shame.

If there is one more noticeable fact than another about Americans it is the lack of deep root in the soil. We have not the strong local attachment which comes with a long family history connected with a family estate. Everybody goes west, or somewhere else, instead of maturing on the ancestral acres, so that home is not so much a spot to grow fast to as to move away from, and no one builds gardens

for strangers who are soon to occupy his place. Nevertheless, the remarkable increase in the culture and sale of plants during the last fifteen years is an unmistakable evidence that we are a plant-loving people; but so far the development is more among nurserymen and florists than in individual interest of home-makers. That is, it goes more by fashion than by personal taste, but many important movements have grown out of fashions, and the proprietor who buys because his neighbor does, gradually comes to look with interest upon his plantations and flower-beds, and in time will come to know something about them and to derive benefit from them.

Beyond any question, a more general devotion to gardening among Americans would help them to lead lives of greater serenity and sanity. They could afford to read fewer books and newspapers if they only learned these lessons of peace which come from contact with nature. It would be a solace to poor and rich. It would cultivate the taste and gratify the love of beauty in many a home where costly works of art are not to be thought of. And is it not also true that the wholesome recreation in the open air would be especially beneficial to the men and women who are devoted to literary work? To return to the clergy once more, would it not be wise for them to take a leaf from the book of their British brethren for their own enjoyment and health, as well as for the effect upon their sermons. There is no better outlet for nervous irritability produced by brain work than out-of-door struggles with reluctant nature and her six-footed armies. If we are to have a vigorous literature we must have hearty men behind it; therefore it is to be hoped that the literary man of the future will feel himself not fully equipped for his profession unless he be the owner of a few square feet of garden soil from which he may derive mental vigor with bodily wholesomeness.

Hingham, Mass. *M. C. R.*

Plant Notes.

Fontanesia Fortunei.—Mr. John Dunbar, the Superintendent of Highland Park, Rochester, New York, calls our attention to the fact that Fontanesia Fortunei is hardy and a desirable ornamental shrub in Rochester if it is carefully mulched in winter. It is a plant of the Olive family, with slender graceful branches covered with deep green leaves, which do not fall until late in the season. The greenish or creamy yellow flowers, which are crowded in the axils of the leaves, are interesting rather than conspicuous. F. Fortunei, which was introduced from China a few years ago, is only known there in the neighborhood of Shanghai, where it is often planted in hedges. Botanists now consider this plant identical with F. phyllyreoides of the Mediterranean Basin and Asia Minor, and it has been suggested that it had been introduced into China from southern Europe or the Levant. Mr. Dunbar, however, finds that F. phyllyreoides grows less freely and does not flower in Rochester.

Narcissus Bulbocodium monophyllus.—This delightful little Hoop-petticoat Daffodil was brought into English gardens more than twenty years ago, but was for a long time rare in cultivation, and was supposed to be difficult to manage. It is a native of Algeria, where it is found in great abundance, and if the bulbs are kept dry and baked in full sunshine all summer as they are at home, they need no other special attention. It is said that newly imported bulbs flower in England in December, but here, at least, after a year's cultivation, this is the natural season of flowering, and Mr. Gerard now has these Daffodils in full beauty in a cool house, where they have grown without any forcing. The delicate flowers are snowy white, with orange-colored anthers, and a panful of the plants in full bloom makes a very pretty show. The corona is bell-shaped, and it has the small perianth sections peculiar to the species. The flowers have a fragrance which is even heavier than that of the Paper-white Narcissus, and which is not pleasing to every one. A figure of the plant is to be found in vol. v., page 211. Professor Foster has raised an interesting and pretty hybrid between N. triandrus and this plant, which is said to combine the charm of both of its parents, with a sturdier constitution than the variety monophyllus. The flower-scapes of this new plant, which he named Narcissus Trimon, by combining the first syllables of the specific names of its parents, are nine inches long, usually two-flowered, each flower being two inches across. The whole flower is milk-white.

Brodiæa (Triteleia) uniflora.—Although this little bulbous plant comes from Argentina, it is hardy in our eastern states, and it bears in late spring single star-shaped flowers on slender stalks above the narrow leaves, which are about one-eighth of an inch wide and six inches long. If the bulbs are planted in the grass and the foliage is not cut until it ripens, the plants will bloom freely year after year in the sod, where the delicate lilac-colored flowers are seen to the best advantage. There is a pure white variety which is quite as hardy and more beautiful. We mention the plant now, however, on account of its value for flowering in pots in winter, for it can easily be had at this season, and the flowers last a long time. The bulbs should be planted in September, and need nothing beyond ordinary treatment, that is, good soil, free drainage and liberal water when growing. A dozen bulbs can be planted to advantage in a six-inch pot set in a cool, shaded frame, with fresh air every day and protection from severe frost. They can be brought into a sunny greenhouse as needed, and will develop rapidly and bloom in about two weeks. After flowering they should have a complete rest, that is, they should be totally deprived of water, dried off and repotted in the fall. Or they may remain in the same pot or pan several years if a top-dressing is given every autumn. There is an objectionable garlic odor to this plant when any part of it is bruised, but the flowers themselves have a faint fragrance which is not unpleasant.

New or Little-known Plants.

A Monstrous Form of the Black Spruce.

THE most curious, and certainly not the most beautiful of all conifers found in gardens is that form of the Norway Spruce, with long whip-like branches, usually called Picea monstrosa, and occasionally found in collections of these trees, always exciting much interest and astonishment.

Three years ago a variety of the native Black Spruce, Picea Mariana, of the same character was discovered by Mr. George Walker on his "Forest Dale" farm, near Williamstown, at the north-eastern base of Mount Hopkins, and 1,175 feet above the level of the ocean, about three miles from the north-western corner of Massachusetts, and one mile east of the New York boundary. When first noticed by Mr. Walker the tree was about five feet high to the top of the leading shoot, and is now eight and a half or nine feet high, its average annual growth being ten to eleven inches. The side branches are horizontal and prostrate on the ground, while the upper ones have a tendency to twine around the central stem. The peculiar habit of this tree is interesting as showing remarkable seminal variation in a tree which has been considered less inclined to vary than the Old World Picea excelsa, and is well shown in our illustration on page 45 of this issue, made from a photograph for which we are indebted to the courtesy of Mr. Alexander Walker, of Williamstown. Like other seedling varieties of conifers, Mr. Walker's Spruce can, of course, be propagated by grafting the ends of the branches on to seedling Spruce-trees; and it is sure to find its way into cultivation, when it will make a good companion to the numerous varieties of the Norway Spruce which delight the lovers of such plants.

Cultural Department.

A few Good Shrubs of the Hardiest Type.

OWNERS of gardens in central and southern New England and New York, and other regions with corresponding conditions of climate, enjoy the advantage of being able to grow a much larger variety of fruit and ornamental trees and shrubs with less trouble than is possible in cold exposures farther north and in higher altitudes, and especially in the cold dry regions of the north-west. Here and there throughout the colder regions, where the mercury occasionally falls to twenty-five or thirty or more degrees below zero of Fahrenheit every winter, sheltered and peculiarly favorable localities are sometimes found where certain plants will grow satisfactorily which will not endure in most positions in the surrounding country. So many costly experiments have been made by private individuals that we now have a fair idea of the powers of endurance of most of the trees and shrubs generally known in cultivation. Exotic ornamental shrubbery has received less attention than most other branches, but within a few years a much wider interest has been shown in this class of plants, and the work of testing and disseminating them has been fostered by some of the agricultural experiment stations. In future we may see some other shrubs as well known and commonly planted about bleak farm-houses as the common Lilac,

Fig. 7.—A Monstrous Form of the Black Spruce.—See page 44.

which now seems so much a part of the country that few people ever think of it as an exotic. It is a universal favorite, and its success is due quite as much to its easy propagation, thorough hardiness and general take-care-of-itself character as for its beautiful flowers. The plants requiring the least attention and care are the ones which will survive in the average farmer's garden. Grown from cuttings, and so on their own roots, some of the improved varieties should become popular, as they are apparently quite as hardy as the old forms. Tartarian Honeysuckles, Lonicera Tartarica, of several variations are extremely hardy, and the common Snowball, or sterile form of Viburnum Opulus, endures cold winters without protection, and is, therefore, popular. These three kinds of plants and a few Roses are the best known in many districts where nurseries are rare and variety is limited. But to these could be added many more which are thoroughly hardy in most trying situations, which are easily propagated, and which require little care after being once well started.

It should not be forgotten that some of the native local shrubs are among the hardiest, and are often quite as beautiful or useful as any of similar kinds that might be purchased. Among these natives are Roses, Spiræas, Honeysuckles, Viburnums, etc. Among enduring foreign shrubs for bleak and exposed situations the Caraganas, or Siberian Pea-trees, take foremost rank. They may be propagated with great facility by seeds. Caragana arborescens is the largest, sometimes growing fifteen or twenty feet high. In the Russian steppes it is said to be greatly used for hedges and screens in the most exposed places. Several other species of Caraganas are equally hardy, but none of them grow so large as C. arborescens, and none are more valuable, although the persistent spiny leaf-stalks of such species as C. spinosa make them curious objects and suggest their value as low hedge plants. All have clear, yellow-colored pea-shaped flowers. Almost equally hardy, and much more showy, are the Mock-oranges, or species of Philadelphus, by a great many people called "Syringa." They are not so common as the Lilac, although the plant propagates itself very freely by seeds. Although the Mock-oranges are very hardy, their close allies, the Deutzias, are not able to stand in the same situations without suffering much injury.

The great-flowered Hydrangea paniculata grandiflora is valuable for its great hardiness and is likely to do well in many parts of the north-western plains, where few showy shrubs thrive.

Rosa rugosa, both the white and pink flowered varieties, is now well known for its extraordinary endurance, and it represents the hardiest of its class in cultivation. It will stand without protection where almost all other kinds will fail, and from its cultivation and improvement we must look for the Roses which will take the place of present garden varieties for planting in those parts of the country where the climate is most severe.

Arnold Arboretum. *J. G. Jack.*

Vegetable Garden Notes.

THE winter thus far has been a comparatively mild one; the temperature has not on a single occasion fallen to zero here, and there has been but little snow. It is somewhat unusual to see plowing, digging and planting operations in this section during the first week of January, but the ground was quite free from frost and in fairly good working order at that time. Although we prefer to manure and dig over in the fall all soil in which vegetables are to be planted, we never are able to complete this work for want of time. During dry frosty weather we had manure wheeled on ground still to be turned over, and deposited in good-sized heaps. When open weather sets in this manure can easily be spread, and there is then no necessity for wheeling through the soft ground with the barrow-wheels half-buried.

It is unlikely that any suitable weather for outdoor work will occur for six weeks. As soon as this change comes any necessary draining ought to be attended to. If drainage has been neglected in the formation of the garden, as is very often the case, no time should be lost in seeing to it. A regular plan of all drains should be kept, and any alterations or additions accurately noted. This will prevent much confusion at any time when it may be thought necessary to alter or repair the drains. Garden-tools of all kinds should be cleaned and repaired. Attention to these matters in season will save both time and expense when the tools are needed for use. Nothing so much shows the want of system on a place as an ill-kept tool-house, and yet this often looks like a useless lumber-shed. Gardeners should see that every man under their charge on quitting his daily work carries such tools as he has been using to the tool-house, cleans them properly, and puts them in place. There is no more slovenly habit than for a workman to lay down his tools coated with manure or earth, and a man who is neglectful of these minor duties will never make a neat gardener. At this season it is well to look over the cellar or storehouse where onions, potatoes and other vegetables are kept, and remove decaying roots. Potatoes will probably need to have some sprouts rubbed off if they have been stored in an overwarm place. Celery, whether in cellars, frames or the open ground, should not be neglected. Air should be admitted on every favorable opportunity to prevent the spreading of mold. Celery has not kept as well as usual here this season. The heavy snowfall early in November and subsequent frosts destroyed many thousands of good plants. Much of the crop was frozen solid, and even such as had been earthed up had the tips badly nipped. The kinds which have kept best with us are Kalamazoo and Giant Paschal, the first named being the most satisfactory.

We usually make our first hot-bed for Lettuce early in January, and from this we get good heads in six weeks' time. We have had no difficulty in providing a supply of lettuce throughout the winter by attending to the frames carefully, and making a hot-bed once a fortnight. A gentle bottom-heat is all that is required, and we mix stable-manure and leaves in about equal proportions for the beds. If at all dry, the manure should be watered and the whole tramped down firmly. When properly made, a hot-bed will maintain a gentle heat for a long time. Too often a quantity of rank straw-manure is thrown into a frame and not mixed or shaken up at all; the result is a violent heat for a few days, which will burn the roots of any unfortunate plants which may chance to be planted over it. For forcing purposes we find White Tennis-ball still the most reliable Lettuce. Radishes of the turnip-rooted class, if sown or pricked in between the Lettuce rows, will come along very quickly. If no hot-bed is at command and a supply of Radishes is desired, excellent ones may be had by pricking them off into boxes of rich compost and placing them on a shelf in the greenhouse. Sowings of Beet and Lettuce should now be made, to be transferred to a gentle hot-bed when large enough to handle. Cauliflower and Cabbage ought also to be started in a cold house without delay, and a few small pots of Parsley ought not to be omitted. About the middle of February we sow a batch of Golden Self-blanching Celery for an early supply; there is always a likelihood of a percentage of these early-sown plants running to seed, more particularly if the plants suffer from lack of moisture at the root. If extra-sized Onions are desired, this is a good time to make a sowing of Giant Rocca, Silver King or Prizetaker; by pricking these outdoors, bulbs can be obtained double the size of those sown in the ordinary way. All varieties of Onions, by being pricked out, can be grown larger, and some growers now treat their whole crop in this way. As a general rule, however, medium-sized roots are more desirable than the larger ones.

Where a good bottom-heat is at command a few Cucumbers may be started; it is, however, unwise to sow these for a few weeks to come, unless a strong steady moist heat can be maintained. A sowing of Tomatoes made now will give ripe fruit about the end of May. Those sown in November are now in six-inch pots and almost ready to be transferred to their fruiting pots. Plants which commenced to ripen early in November are still full of ripe fruit, with plenty coming on. Periodical surface-dressings and applications of liquid-manure to plants in fruit should not be neglected, and artificial pollination must be attended to if a good set of the fruit is desired.

Cold frames containing Lettuce, Parsley, Cauliflower or any other plants require picking over occasionally, and all old and decaying leaves be removed. Snow must not be allowed to lie on the frames, except during severe weather, air and light being essential to the making of sturdy plants.

Taunton, Mass. *W. N. Craig.*

Propagation of Chrysanthemums.

ANOTHER season's work among Chrysanthemums is now beginning. Our stock has been stored in a cool, light place just long enough to develop good stocky cuttings, and after looking over the lists of novelties we shall decide which kinds to grow during the coming season. The time to propagate depends upon the use for which the plants are intended, and, to some extent, upon the facilities at command. If we have all the conveniences of heated glass structures, and intend growing large specimen plants, we should commence to propagate now. Those who are less fortunate in the matter of conveniences may wait until spring, and still have time to grow neat specimens, which are really more serviceable for general decorative purposes.

English growers propagate much earlier than is necessary

here, beginning as early as November with some varieties which are intended for specimen flowers. Their plan, however, is somewhat different from ours, as they allow a break of two or three stems, each bearing one bloom. This, with different conditions of climate, accounts for the longer season required. Generally the finest specimen plants they grow are those which have carried three blooms the preceding season. The plants grown and exhibited by Mr. Brooks at the Centenary Festival of the Chrysanthemum Society at the Royal Aquarium were of this kind, commonly called cut-backs, meaning that the old stems had been cut back to within a foot or less of the soil, and allowed only to break from the stem, and not from the root-stock. Very little advantage is gained by following this plan here; under changed conditions of climate we can grow as large plants in eight months as they do in ten months in England.

Although cuttings will root at a temperature very little above the freezing-point, it is better to use a little bottom-heat when this is possible, since it insures quicker rooting and saves time. Select the strongest shoots—suckers if possible—and prepare them with a sharp knife, shearing off a few leaves at the tips, which are liable to hang around the base of the cuttings and encourage damping. Water freely, even to saturation, for the first few days, for on no account should the cuttings be allowed to wilt, and use shading only when the sun shines. The cuttings should be rooted in about three weeks, when they may be potted into small pots, using a light soil at this stage of their growth.

For specimen blooms the first of May is early enough to make cuttings for the first batch, and all that we need do now is to keep our stock as sturdy as possible until then. If the stock is in cold frames now, so much the better, but it would not be advisable at this season to place it in such frigid quarters. If already started into growth, they had better be kept quietly moving, and be topped early in March, and a new crop of cuttings may be made about the first of May.

Ivory and Joseph H. White are still the best early white varieties for specimens, and Minnie Wanamaker and White Cap for late. President Hyde and Mrs. Walter Baker are excellent early yellow varieties, and W. H. Lincoln the best medium to late, and probably the best all-around yellow variety now known. Good reds are yet scarce, and it is difficult to excel Cullingfordii when it is well grown. G. W. Childs makes a very fine specimen. For pinks we have a good selection. Portia was the most admired of all last season. Duchess of Connaught is of a fine lavender shade. The original Louis Bœhmer is superior to any of the so-called improved varieties of this flower.

Wellesley, Mass. *T. D. H.*

A Few Plants that like Shade.

AMONG the hardy perennial plants that thrive in shady situations, especially under deciduous trees, are many sorts which produce the earliest flowers in spring. A conspicuous group among these are the Trilliums. Although some of them continue until midsummer, their first growth is made while they receive considerable light and warmth from the sun, before the trees have come into full leaf. The Dog-tooth Violets are another class. Our yellow Adder's-tongue, the most common of this group, is one of the earliest wild flowers in spring. The Chionodoxas (Glory of the Snow) succeed well under the shade of deciduous trees. This is owing, no doubt, to their earliness, and deprived of the light they get when they first come up they might not succeed. The Dicentras are suited to such locations, especially D. cucullaria (Dutchman's Breeches), and the one commonly called Squirrel's Corn, D. Canadensis. An admirable little plant for shade, and one easily established, is Rhue Anemone, Anemonella thalictroides. It closely resembles the Wind Flower, Anemone nemorosa, but lasts longer and is easier to establish. The European Wood, or Snowdrop Anemone, A. sylvestris, is another pretty species which likes shade and moisture. The Hepaticas, though they do not require as much shade as some other plants, like shade some of the time at least, and, unlike many of the early plants, they have abundant foliage that lasts until the following spring. They are benefited by a good supply of well-composted manure, and do best if they are not disturbed after they are once established. The Wild Gingers, or Asarums, are shade-loving plants. Though not showy, their foliage is good, and they are useful in many ways. All of our native Meadow Rhues do well in shade, and the early one, Thalictrum dioicum, is useful for shady locations, and not as tall as some other species. Both of the Actæs, or Baneberries, though not always found in shade, are well suited to this condition. Their flowers are pretty in their season, and their fruit is quite as interesting. The Blue Cohosh, Caulophyllum thalictroides, and the smaller Solomon's Seal, Polygonatum biflorum, are good plants for shade, not so much for their flowers as for foliage. They form fine large clumps during a good portion of the summer. Both species of Twisted Stalk, Streptopus roseus and S. amplexifolius, do well in shade. I have found that they require more than one season to become established. One of our common wild flowers in northern New England, growing in rich, moist woods, is the large Bellwort, Uvularia grandiflora. It bears transplanting well and makes a good showing during most of the summer. False Miter Wort, Tiarella cordifolia, is a very desirable plant for moist, shady places, as well as for the rockery. It is one of those species that can be used in various ways and flourishes in shade or sunlight. It is attractive in the front border, and when it has finished flowering its rich dark green foliage lasts throughout the season.

The majority, perhaps, of native Orchids prefer shade. The two yellow Lady-slippers are probably the surest of these to succeed. The little white one from the west, Cypripedium candidum, does well in partial shade. About all of our native Ferns like shade, and can be used in such locations with proper preparation of the soil.

Nearly all of these shade-loving plants attain their greatest size in woodlands in a moist, rich, black soil. When they are transplanted into a shady place that has little fertility this want must be supplied, and this can best be done by adding rich soil from the woods. When planting in the shade of trees it is also necessary to supply moisture during dry weather, since trees rob the soil of both fertility and moisture.

Charlotte, Vt. *F. H. H.*

Meetings of Societies.

Nebraska State Horticultural Society.—I.

THE annual meeting of the Nebraska State Horticultural Society was held in the State University from January 15th to 17th inclusive. Last year the plan was adopted of confining the meeting chiefly to the apple, so that the report when issued should be in the nature of a monograph on the subject. The same plan was continued this year, except that three fruits were taken up for consideration—the grape, plum and cherry.

THE BOTANY OF THE GRAPE.

Dr. Charles E. Bessey read a paper on this subject, in which he said that there are about thirty-five or forty species of the Grape in the world, of which North America has from eighteen to twenty-three, according to the number regarded as true species. Europe has one, which also extends into northern Africa. Tropical or Central America has two, the East Indies two, and the remainder are found in eastern Asia. It will thus be seen that North America has more species than all other parts of the world together. The genus is confined mainly to the north temperate regions. Few species reach into the tropics, and none at all are found in the southern hemisphere.

For horticultural purposes only eleven species need be considered: (1) These are the northern Fox Grape, Vitis labrusca, represented in cultivation by Concord and Catawba; (2) The Mustang Grape, V. candicans, represented by Elvicand; (3) The Summer Grape, V. æstivalis (Herbemont and Eumelan); (4) The Downy Grape, V. cinerea; (5) The California Grape, V. Californica; (6) The Sand Grape, V. rupestris (Munson and America, hybrids with V. æstivalis); (7) The Riverside Grape, V. vulpina (Clinton, Elvira and Tayler); (8) The Red Grape, V. palmata; (9) The Frost Grape, V. cordifolia; (10) The European Grape, V. vinifera (Black Hamburg and White Chasselas); (11) The southern Fox Grape, V. rotundifolia (Scuppernong and Thomas).

The northern Fox Grape has given us nearly all of our best varieties, but this is, no doubt, chiefly due to the fact that this was the species which our forefathers found when they began to improve the native grapes. Yet its distribution, entirely east of the Alleghany Mountains, indicates that it is really less adapted to the needs of the greater portion of the country than some of the other species.

The form of the Sand Grape has been modified till it is almost a bush, and not a climbing plant, like the others. It sometimes has no tendrils to climb with, even if it were not in a region in which there are few trees and shrubs to cling to. The Munson Grape, a cross between this species and the Summer Grape, has been reported to stand a temperature of

twenty-seven degrees below zero. This is a particularly interesting fact, since both of the parents are found in southern latitudes, and this seems to show that it does not always follow that the offspring will be tender if the parents are tender.

The Riverside Grape is the common species in Nebraska. Owing to its wide distribution, this is a desirable parent to use in aiming to secure hardy varieties. Professor Munson says that this must enter into all varieties which are expected to endure the extreme winters of the north-west.

The Red Grape occupies a small region near St. Louis. This is a recent variation from the Riverside Grape, with bright red canes when young and deeply lobed leaves. It is quite ornamental, and has proved hardy at the Arnold Arboretum.

The European Grape in a wild state is very similar to our Frost Grape, with small blue berries. The wonderful improvement which has been wrought in this species leads us to think that we can do almost anything with our best native Grapes by patient and well-directed effort. The European Grape is not important in Nebraska at present, but it will undoubtedly yet be grown here, since it is not the climate that prevents its growth, but the phylloxera, and this can be overcome as well here as in other countries by grafting on the proper roots. The great variation in color which has occurred in varieties of Vitis labrusca is an encouraging feature in the possibilities of future improvement from this and other species.

THE PROPAGATION OF THE GRAPE.

This was the subject of a paper read by G. A. Marshall, of Arlington. For commercial purposes propagation from three-eye cuttings is the most practicable way under ordinary conditions. These are taken in the fall, buried in the ground, tops downward, and covered with three or four inches of earth. In Nebraska this needs to be wet thoroughly and then covered with two inches more of soil. When freezing begins the whole is covered with about six inches of hay or similar material. In spring the covering is removed, with the exception of about two inches of soil, and the bed is surrounded with a board frame for protection from winds. This two inches of soil which covers the cuttings must be kept wet without fail. No rotting need be apprehended, and they should be kept as warm as possible, with the frame covered in very cold weather. The time to plant is when they begin to send out roots, which will usually be within fifteen or twenty days after the upper part of the covering is removed. The cuttings should lean toward the north or east when planted, and the soil should be firmly packed about them, and the row covered with a ridge of soil till the roots are thoroughly started.

BREVITIES.

Some of Rogers's hybrids give good satisfaction in the south-eastern portion of the state. For general market purposes Moore's Early proves profitable, owing to its season, though it does not yield more than half or two-thirds as much as Worden or Concord. It bears heavy manuring. The Worden is the best all-round market variety, because it ripens here before competition becomes so close from other localities. Among newer varieties, Eaton is giving satisfaction wherever tried. It ripens with Worden, appears to be as hardy as Concord, and is one of the largest and handsomest black grapes grown.

Grafting the vine above ground was recommended so that the cion cannot send out roots of its own, for this will partially overcome the value of a stock which resists phylloxera. Even varieties of Vitis labrusca are somewhat subject to the attacks of this pest, and this susceptibility appears to increase with the age of the vine. The Delaware seems to be affected worse than any other variety.

Professor N. E. Hanson stated that in an experimental hybridizing at the Iowa Agricultural College varieties of Grapes and Strawberries from Manitoba were used, with the hope of securing increased hardiness in the offspring. The hardier plant is used as the mother in all cases. He finds the secret in keeping pollen to be in getting it thoroughly dry before it is corked up in the vial.

Western New York Horticultural Society.—I.

MORE than five hundred members of this progressive society met in Rochester last week at its fortieth annual meeting. Nearly all these men are actively engaged in some business connected with fruit-growing, and, perhaps, these meetings bring together more men who are skilled in the cultivation of orchards and vineyards than can be found anywhere else in the country on any occasion. At this meeting, like its predecessors, papers were read by many men of science, from this and from other states, and the business, as usual, was conducted with admirable promptness and efficiency. The officers elected for next year are William C. Barry, of Rochester, President; S. D. Willard, of Geneva, First Vice-president; Secretary and Treasurer, John Hall. We present this week in a condensed form some of the addresses and discussions:

PRESIDENT BARRY'S ADDRESS.

Unproductive Apple Orchards.—During the past summer I have had occasion to visit several localities in western New York, and I have been greatly impressed with the number of old, worn-out apple orchards, which are an eyesore wherever found, and which should be cut down and used for firewood. It is difficult to understand why so many dead and dying trees have been allowed to stand after having outlived their usefulness. The beauty of any farm is marred and its value depreciated by these old trees. I ask the members of this society to give aid in remedying this condition of things. The public good and local pride demand this. Again, the number of orchards of medium age which are partially or totally neglected is very large. These orchards should be taken care of or destroyed. Few of us realize how much valuable land is unproductive owing to its condition. In most cases, by plowing the sod and fertilizing and pruning, vigor, health and fruitfulness can be restored. Many hesitate to undertake the work on account of the expense involved, but it is evident that there has been too much delay already; we are really forced to meet an emergency and to do something at once. As to the advisability of cultivating and pruning there is no question. A thorough cleaning up will completely change the aspect of our fruit farms and homes, and many places can be made valuable which otherwise are worthless. A grower at Carlton, Orleans County, stated recently at a farm institute that he had thinned out his orchard to the extent of 600 trees, and sprayed the remaining 600 three times with Bordeaux mixture. As a result he marketed 2,400 barrels of fine apples at an average price of $2.13 per barrel.

Fruit as Food.—The use of fruit as an article of food is becoming more and more general, though the amount consumed in families is very small compared with what it should be. Very many labor under the false impression that fruit should only be taken at the end of the meal. Fresh fruit should be partaken of at breakfast for at least six or nine months of the year. In the morning it is cooling, refreshing and easily digested. Perfectly sound, ripe fruit should be secured in the autumn for the winter's supply. In this region it is easy to secure apples and pears of the best grades. Wealthy Europeans send their orders annually for a year's supply of fruit to this country, and have it shipped directly to their homes, paying a good price for a superior and selected article. The day is not far distant when it will be possible for all who care to indulge in it to have fresh fruit on their tables the year round, and in this locality it need not be a luxury, for the prevailing prices will be so low as to enable all to buy, and more fruit with less meat will certainly conduce to a healthier condition of body and mind.

Commercial Fruit Growing.—Early in the year the prospects for a large apple crop in this vicinity were bright, the trees blossomed full, but when the fruit had attained the size of hickory-nuts it dropped; this was probably due to a heavy frost in May; then it was predicted that there would be no apples; however, there has been a crop harvested much larger than was anticipated. Many orchards have paid well. Much fruit is at present in cold storage in the expectation that prices will advance later on. I see it stated that Mr. Wellhouse, of Kansas, has marketed 23,000 barrels from sixty-five acres, and that he has produced fourteen crops in fifteen years. We can hardly expect results equal to this, but still the outlook is not discouraging when we consider how neglectful we have been in many respects. In plain English, many of our orchards have been starved. If the proper nutriment be supplied, a change will take place. Surface cultivation and application of potash will do more than anything else to make the orchards remunerative. The time has come when it will not pay to send poor fruit to market in the hope of getting good returns. The large quantities of fruit from California, sent annually to the eastern markets, have made competition keen, and it will become necessary to do as the Californians do—pack selected fruit in small attractive packages. The fertility of our soils has been exhausted, a fact we have to look squarely in the face. Where fruit growing is unsatisfactory it is mainly due to this cause;

with fertility restored and good cultivation, the prospects are favorable for profitable crops.

EXHIBIT AT THE STATE FAIR.—The exhibit made by this society at the State Fair, held in Syracuse, was remarkable, not alone for its extent and completeness, but for the superior quality of the fruit and the attractive manner in which it was displayed. Taken as a whole, it is certain that such a display could not be duplicated anywhere in the United States or Canada. Great care had been bestowed on the nomenclature, so that few, if any, errors could be detected. The exhibit was intended to show, and the object was well accomplished, the capabilities of the genial climate and fertile soil of western New York. Few who enjoy the privilege of living in this region realize the advantages over those who live where fruit is scarce and hard to obtain. The favored few have no monopoly of these delicacies here; every one can enjoy them as freely and as abundantly almost as the air we breathe, and these exhibitions are made with a view of showing what every landowner should and can have if he be so disposed.

SCHOOL YARDS.—I have on a former occasion suggested to this society the importance of adopting measures by which the grounds around our schoolhouses may be relieved of their forbidding aspect. A little labor and expense will transform the surroundings into delightful pleasure-grounds. The trees, shrubs and plants for the purpose can be obtained in any of the near-by woods. The improvement of schoolgrounds will accomplish a double object—the taste of the pupils will be cultivated, they will become familiar with many charming objects which would otherwise be overlooked, and the garden will serve as an example and pattern for the neighborhood. In the selection of teachers I believe preference should be given to such as are known to be lovers of Nature and who will take pains to awaken an interest in a study of plants. I believe that opportunities for great improvement lie in this direction, and this can be brought about with little expenditure of money.

THE SCIENCE OF TILLAGE.

Professor I. P. Roberts read a paper which explained how cultivation in many different ways made orchards and vineyards productive and profitable. Part of this excellent paper is herewith given:

Most arable soils contain large amounts of dormant plant-food; all soils contain a small amount of plant-food which is available; some plants have the power of setting free this nourishment to a greater degree than others, our common Mullein furnishing a notable example of this power. It is evident, then, that either plants which have unusual power to secure nourishment must be grown on lands which fail to respond, or more nourishment must be provided if the higher and more exacting plants are raised. There is enough of nearly all the elements of plant-food, including potash and phosphoric acid, in the first sixteen inches of ordinary soils to supply crops for several generations if the plants could only get hold of it. There is a great deal of nitrogen, too; more of it in the subsoil than in the upper layers, and this is part of the reason why Clover, Peas, Beans and other deep-rooted plants are so valuable.

When plants languish, if adapted to the climate, it is evident that the soil has not been properly prepared, so that the plant-food in it is not available, or that there is not sufficient moisture to transfer it from the soil to the plant. Cultivation may be made to obviate partly or wholly all these difficulties. Plant-food which is unavailable is useless, and one of the chief objects in cultivating the soil is to prepare this for use by setting it free and diluting it with water so that it can be taken up by the roots of plants, or by opening and loosening a soil that is too wet or too compact to allow the plant-food to be liberated by fermentation.

If water carries plant-food downward it can also be made to carry it upward from the subsoil to the feeding roots of the plant. The soil-water, which in the day-time rises, not only brings with it plant-food, but it enables the plant to secure the nourishment already in the soil around its roots.

Cultivation is a powerful factor in setting free plant-food. It increases the solubility of plant-food by crumbling, rearranges the particles of soil, breaks them up so that no two of them are in the same position that they were before the tillage, and the particles present more surfaces for the roots to act upon with their living chemistry. Cultivation when properly done also hastens nitrification and thus helps to prepare for use the important and expensive element of nitrogen so essential to plant-growth.

Cultivation greatly assists the soil in retaining its moisture in dry weather. The great orchards and vineyards of California are cultivated deeply many times during the early part of the season, and although no rain falls from April to November, the trees and vines prosper quite as well as where there is an abundant rainfall. During the winter months in most of the California fruit valleys the soil is filled with water by frequent rains. By plowing the vineyards and orchards in April, when they have become dry enough to do so, and by keeping the harrows, cultivators and gang-plows at work during May and June, and sometimes into July, nearly all of the moisture of the subsoil is conserved and made available for the growth of the plants. One great object in cultivating the land is to form a mulch. While in early spring, cultivation, as has been said, may serve to dry the land out and open it to absorb heat; later in the season, just the reverse of these conditions is desirable. When a layer of a few inches of dry porous earth is spread like a blanket over damp ground the moisture will not only be kept from evaporating, but plant-food will be set free and chemical action hastened. The mulch of earth made by light tillage will shade the land and keep it cool in hot weather, and in every way be beneficial. In California four or five tons of water, which would otherwise evaporate from every acre, are held for use in the soil by this mulch of surface tillage.

Before the orchard or vineyard is set, the ground should be plowed, subsoiled and summer-fallowed for an entire season, because there is a vast amount of plant-food in the soil, and it is cheaper to secure it by cultivation than to add plant-food from outside sources. Then, too, the thorough preparation of the soil brings it into firm physical condition, serves to aerate it and also to promote drainage. Too much stress cannot be laid upon the thorough preparation of the land for orchards and vineyards, or any other crop that is to remain upon the land for several years. After the plants have been set the surface cultivation should go on as carefully and systematically as though a crop were expected immediately.

On most fruit-plants a light dressing of phosphoric acid (in some form of bone, say), when the trees and vines have come into bearing, will produce most satisfactory results, and in almost all cases where plant-food is slightly deficient a dressing of potash will be found to be extremely beneficial. A sowing of ten or fifteen pounds of Crimson Clover to the acre at the last cultivation of the orchard will furnish, unless in exceptional cases, all the nitrogen needed when it is turned under next year. By a little observation the planter should learn to know by the size and character of the leaf, by the growth of bark and the amount of wood made each season, the character of the plant-food which should be added.

Mr. James A. Root spoke of the good cultivation practised by the Mennonites in Kansas and Nebraska, on account of which they had crops last year while their neighbors had none. By thorough cultivation in a dry time we can often get a better crop than the average in a wet season.

Recent Publications.

The forty-fourth and forty-fifth parts of the English edition of *Lindenia*, or an Iconography of Orchids, published by Lucien Linden, of Brussels, has just reached us and maintains in the beauty of its illustrations and the excellence of the descriptive matter which accompanies them the standard set by this important work in its earlier numbers. In the present parts there are figured Cypripedium Denisianum, a hybrid between C. seligerum and C. superbiens, and described as a strong grower, very proliferous, and one of the most desirable hybrids of its class; Cattleya Mossiæ, var. Treyeranæ, a variety with broad rose-colored petals and sepals and a lip covered by a bright golden-yellow blotch on which the close red streaks appear as dark purple passing into maroon; Odontoglossum Pescatorei, Prince of Orange, a variety of distinctive character, due to the orange-yellow ground color of the segments and the shape of the lip; Cattleya Cupidon; C. guttata, var. tigrina, a distinct form of one of the best-known and longest cultivated species of the genus; Catasetum macrocarpum, var. Lindeni; Cypripedium Charlesworthii; and Mormodes Cogniauxii, a recent introduction from Columbia, that flowered for the first time in Europe last June, in the garden of the Société de l'Horticulture Internationale of Brussels, and was dedicated to Monsieur Alfred Cogniaux, who has described the Brazilian Orchids in Martius's *Flora Brasiliensis*.

Notes.

Experiments conducted at the Alabama Experiment Station with Ragi Millet, Eleusine coracana, and Kodo Millet, a species of Paspalium, both obtained from the Madras Presidency, seem to prove that these plants will make good pasture crops for cows and other stock, and also be profitable hay-producing plants in the southern states.

A Tennessee paper states that Mr. Thomas L. Walker, seventy-five years ago, planted four walnuts on his father's farm, near Knoxville. Mr. Walker died ten years ago, when the four Walnut-trees grown from the seed he planted averaged four feet in diameter, and their value, if cut and sawed, would have been not less than $400 a piece.

The *Pacific Rural Press* gives an illustration of the Calla Snowflake, which is one of Mr. Burbank's new creations. It is a seedling of the dwarf variety Little Gem, but its flowers never grow half as large as those of that variety, and the leaves are also much smaller. The flowers are snowy white and gracefully moulded, and it is altogether the smallest Calla yet produced.

We have received the first number of the *New Jersey Forester*, which is a bimonthly pamphlet devoted to the development of the forests of that state. It contains twelve pages of instructive matter, and the leading article, by Mr. Fernow, gives the best kind of advice to the owners of New Jersey woodlands. The pamphlet is the official organ of the South Jersey Woodmen's Association, which was organized to protect the forests in that section, to insist upon the enforcement of laws in relation to forest-fires, and to encourage such management of woodlands and waste lands as will help to conserve the water-supply, protect game and insure a continued supply of forest products.

The *Southern Lumberman* says that mahogany logs from the east coast of Africa have got as far west as Louisville, Kentucky, and adds that it is much cheaper than the mahogany from Central America and Cuba. From these Mahogany forests in Africa it is said that twelve million feet of lumber have already been cut and exported, and they promise to yield an immense revenue to the British and French colonists who have seized upon the territory. The wood has a tinge of pink in contrast with the somewhat reddish color of the American variety, and some of the squared logs which have been imported are two by three and a half feet in size. We may add that this African mahogany is the wood of Khaya Senegalensis, a tree which belongs to the same family as the true Mahogany, and is closely related it. It is not so desirable a cabinet-wood as the Mexican or Cuban Mahogany, but is more like the Central American wood. Occasionally there are logs richly figured, and these have been manufactured here into very attractive veneering.

At the late meeting of the Ohio Horticultural Society, Professor Green, of the State Experiment Station, in a report on new fruits, stated that Eldorado promises to take a place among standard varieties of Blackberries. It has endured a temperature of twelve degrees below zero, and is certainly hardier than Lawton or Erie, which it nearly equals in size of berry, and probably is as hardy as Snyder or Ancient Briton. Of larger-fruited berries, Minnewaska is about the hardiest. Among Raspberries, the variety Ebony bears black berries, which present a beautiful appearance in a basket. It is of medium size and season. Eureka commences to ripen early, and bears very late, covering the entire season of Palmer and Gregg, and yielding about as much as both together. The Gault seems to be an exception to the so-called ever-bearing varieties, which are generally worthless, in that it is vigorous and exceedingly productive. The main crop begins to ripen with the Gregg. The berries are large and firm, and the plant bears through a very long season.

A correspondent of the *Strawberry Culturist* writes that he last year tried the so-called trench system which he heard was practiced at the Bryant Nurseries, in Quincy, Illinois. The plan is to dig trenches sixteen to twenty inches deep, leaving a space of but six to eight inches wide at the top between them. The trenches are then filled with straw and coarse manure, which is trodden and pounded firmly. The plants are set on the ridge between the trenches, and the litter is said to retain water enough from the early rains to carry the crop through the dry summer. The claim is that larger and more berries are produced, and by cutting the runners along the edge of the straw the same rows may be kept for years, with only a narrow strip to weed. Certain difficulties in the mechanical construction of such beds at once suggest themselves, and there seems to be no good reason why water will remain so much longer in straw than in earth. We should counsel novices to proceed slowly if they propose to make any experiments with the new method.

A correspondent of the *Gardeners' Magazine* writes of his success in raising plants of Pteris, Adiantum and other Ferns from spores in the following way: With a hammer and chisel he cut a basin three-quarters of an inch deep in the wide side of a brick, leaving a ridge around the edge. Into the bottom of this depression he placed a thin layer of finely pulverized brick-dust made from the particles which he had chiseled out of the cavity. On this layer he sowed the spores of the Ferns, and then covered the brick with a sheet of glass which rested on the edges of the basin. He then set the brick in a shallow dish or saucer in which water was constantly kept, and the whole was placed on the top of a pipe under a stage and properly shaded. The house had a flow and return pipe only, but, of course, all that is needed is some position where proper warmth and shading can be given. The porous brick will take up from the little water kept in the saucer enough to supply the needed moisture to the spores, and when the young Ferns are ready to prick out, the layer of dust makes their removal simple and easy. The writer thinks that amateurs sometimes fail in raising Ferns from spores by keeping the temperature low, when too much water sours the soil, or too little cakes it and kills the spores.

Raffia, which is the cuticle of the leaf of the Madagascar Palm, has been for some years dexterously plaited in ladies' hats, although most of the wearers have been innocent of the material which formed their head-dress. In the same way bast, or the inner bark of Hibiscus elatus, another fibrous substance which gardeners use for tying, has been pressed into the service of the milliners after being bleached and dyed, and when it is so treated, and twisted or braided, it forms a very light lace-like material. The bark of the Baobab, Adansonia digitata, after being well bleached, is also used for the same purpose, but many of the milliners' materials are so completely changed by the different processes which they undergo, that it is hard for an expert to determine their botanical origin. Split willow wood, which under the name of chip was largely used thirty or forty years ago for hats and bonnets, is once more bleached and dyed and plaited for this purpose, while single fibres of the Sisal Agave and Manilla Hemp, Musa textilis, are placed side by side and united by means of gelatine into a tape-like form and submitted to a heavy pressure, which not only gives a thin material like flattened straw, but one with a remarkable gloss, due to the pressure. The varieties of design in which these Sisal and Manilla plaits are used are endless, and there is a great demand for them all over the civilized world.

Besides potatoes, Bermuda is now sending limited quantities of onions, beets, lettuce, string beans, spinach, parsley, carrots, peppers, kohl-rabi and strawberries, and small lots of beans, onions and okra come from Cuba. The importations of potatoes from Europe since the first of October have fallen short of those received last year by 150,000 bags, while the receipts of domestic potatoes during the same time in this city has been increased by about the same amount. The first rhubarb of the season in this market is from Long Island hot-houses, and sells at retail for twelve and a half cents a bunch. Catawba grapes are occasionally seen in fair condition, a small basket costing twenty-five cents. Selected Spitzenberg apples are quoted as high as $6.00 a barrel at wholesale, Greening, Northern Spy and Baldwin apples ranging from $3.00 to $4.50. A few Bellflower apples find ready sale in the fruit-stores at thirty cents a dozen, showing that they are considered choice fruit here, although in Philadelphia markets they are esteemed more highly. Some of the showiest and best Newtown pippins seen here this winter are now coming from Vermont. These bring from sixty cents to $1.00 a dozen, or $8.00 a barrel. The last Beurre d'Anjou pears, from Rochester, are now in the market, along with large and showy Easter Beurre pears, from California, which have been carried along in cold storage. The latter cost $1.00 a dozen. Winter Nelis, Comice and P. Barry are in fair supply, and bring from forty to seventy-five cents a dozen. There is nothing to add to what has already been said about the destruction of the orange crop in Florida. The scarcity of all citrous fruits will probably have a tendency to hurry forward the supply from California, and a few small sample lots have been reported already.